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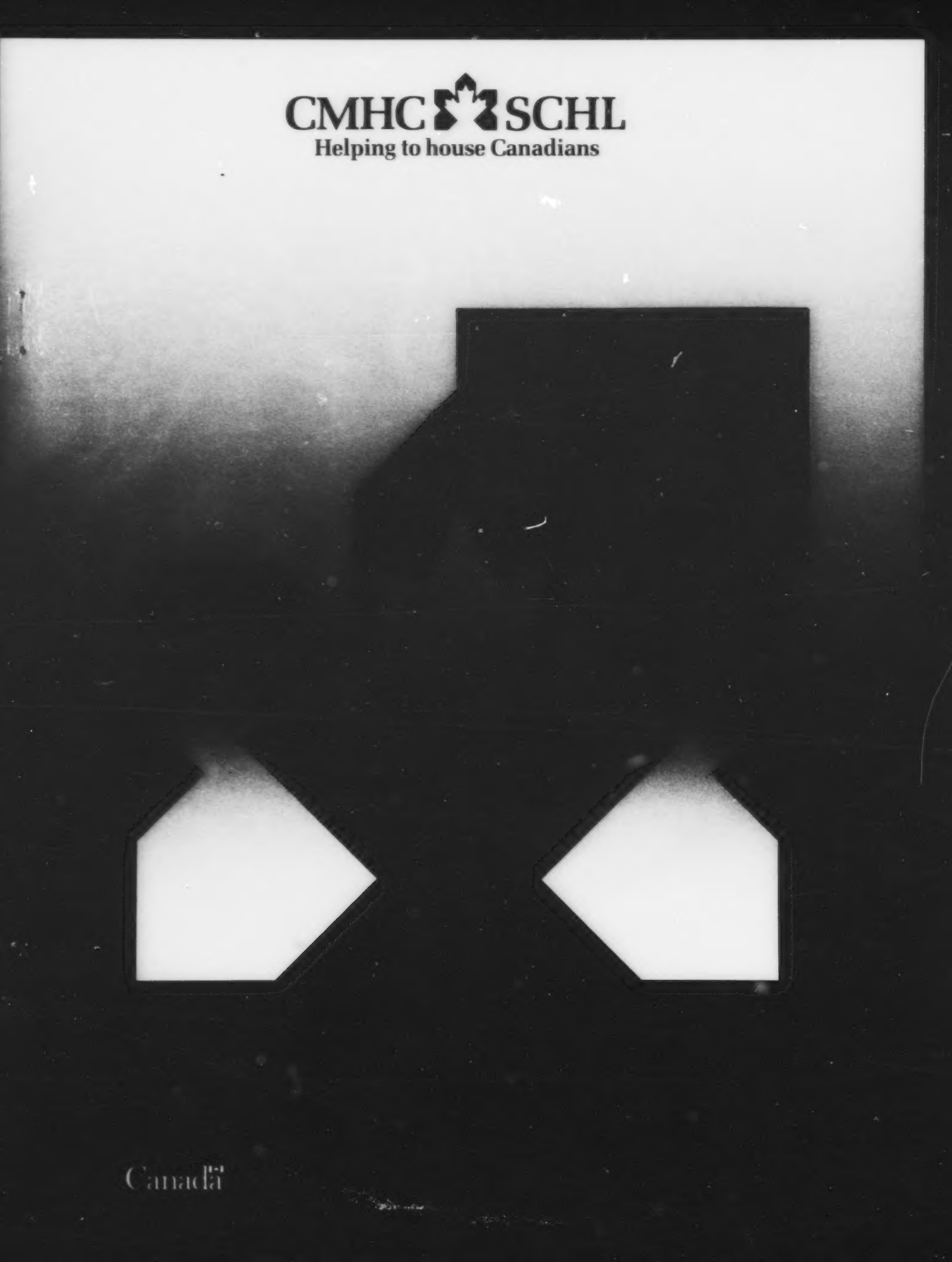

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SURVEY OF TECHNICAL INFORMATION TRANSFER TO SUB-TRADES

Draft Final Report

SURVEY OF TECHNICAL INFORMATION TRANSFER TO SUB-TRADES

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SUMMARY

Canada Mortgage and Housing Corporation (CMHC) and the Ontario New Home Warranty Program (ONHWP) have been producing literature, videos and delivering workshops to home builders for several years. The purpose of these efforts is to familiarize the house construction industry with innovations and methods to help prevent or reduce construction problems, and to positively influence the quality of houses being produced. In an effort to determine the effectiveness of current information transfer vehicles, a survey of house building sub-trades was ordered.

The main target group for the survey was the sub-tradesmen working as subcontractors to builders. The survey was conducted across Canada, in the following regions: Ontario (40.6%), Atlantic region (12.2%), Quebec (22%), the Prairies (14.7%) and British Columbia (10.5%). Sites were chosen based on residential construction acitivity.

During the survey it was discovered that very few people realized that CMHC was involved in housing research and produced technical information. The response to the publications was poor, as many had never seen the literature before. Those that had were often the site supervisors and builders. CMHC must improve their visibility with the tradesmen. The French versions of these documents must be properly translated, using words common on the construction site and not dictionary French.

There are three main vehicles for information transfer. These are direct mailing, advertising, and distribution of publications through various people, organizations, stores, etc. The most popular method with the tradesmen is the distribution through people and organizations. There is no guaranteed way in which to reach all the tradesmen, although site visits, with personal contact with a CMHC or ONHWP representative and visual contact with the publications, is thought to be the most effective means. Direct mailing was also popular with the tradesmen, however since there is no common organization that links them all, there is no complete list of all the tradesmen that can be used to obtain the names and addresses.

The desire for further training among the tradesmen is there, however in the competitive market, there is no incentive to improve the construction techniques. Home buyers look primarily at the architectural details and the cost and not the contruction techniques. No substantial improvements will be made to housing construction without public demand and/or regulation. Many tradesmen are not willing to pay for the publications, but are interested if the information were free. Good site supervision and good designer specified details are also essential for good construction practice.

RÉSUMÉ

La Société canadienne d'hypothèques et de logement (SCHL) et le Régime de garanties des logements neufs de l'Ontario produisent depuis quelques années de la documentation, des vidéos et des ateliers à l'intention des constructeurs d'habitations. Ces efforts ont pour but de familiariser l'industrie de la construction résidentielle avec les innovations et les méthodes qui peuvent prévenir ou réduire les problèmes de construction et par le fait même améliorer la qualité des logements. En vue de déterminer l'efficacité des véhicules actuels de diffusion de l'information, un sondage auprès des corps de métier de la construction résidentielle a été commandé.

Le sondage, ayant pour cible les corps de métier qui font de la sous-traitance pour les constructeurs, a été mené d'un bout à l'autre du Canada dans les régions suivantes : Ontario (40,6 p. 100), Atlantique (12,2 p. 100), Québec (22 p. 100), Prairies (14,7 p. 100) et Colombie-Britannique (10,5 p. 100). Les régions ont été choisies selon le niveau d'activité de la construction résidentielle.

Ce sondage a permis de découvrir que bien peu de gens connaissent la contribution de la SCHL à la recherche et à la production de documentation technique sur le logement. Les réactions par rapport aux documents sont médiocres puisque nombre des enquêtés ne les ont jamais vus. Ceux qui les ont déjà consultés sont surtout les superviseurs de chantier et les constructeurs. La SCHL doit améliorer sa visibilité auprès des gens de métier. La traduction française de ces documents doit être appropriée, c'est-à-dire utiliser des termes courants sur les chantiers de construction plutôt que ceux tirés des dictionnaires.

Il existe trois principaux véhicules de diffusion de l'information : le publipostage, la publicité et la distribution de publications par l'entremise de personnes, d'organisations, de magasins, etc. La méthode la plus populaire chez les gens de métier est la distribution par l'intermédiaire de personnes et d'organisations. Il n'existe aucun moyen infaillible d'atteindre tous ces gens, bien que des visites sur les chantiers, des rencontres avec des représentants de la SCHL ou du Régime de garanties des logements neufs de l'Ontario ainsi que le contact visuel avec des publications sont considérés comme les méthodes les plus efficaces. Le publipostage est aussi populaire chez les gens de métier, mais comme ils n'ont pas d'organisation commune les unissant, il n'existe pas de liste complète de toutes ces personnes que l'on pourrait utiliser pour obtenir leurs nom et adresse.

Il existe une réelle volonté de perfectionnement parmi les corps de métier. Toutefois, la concurrence qui fait rage sur le marché est loin d'encourager l'amélioration des techniques de construction. Les acheteurs de maison s'intéressent surtout aux caractéristiques architecturales et au coût plutôt qu'aux techniques de construction. Aucune amélioration substantielle de la construction des habitations ne sera possible tant que le public ou les autorités ne l'exigeront pas. Peu de gens de métier sont prêts à payer pour des publications, mais ils sont intéressés à recevoir de l'information gratuite. Une bonne supervision de chantier ainsi que de bons détails d'exécution réalisés par un concepteur sont également essentiels à de bonnes méthodes de construction.

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Canada

Survey of Technical Information Transfer to Sub-Trades

1. INTRODUCTION

Canada Mortgage and Housing Corporation (CMHC) and the Ontario New Home Warranty Program (ONHWP) have been producing literature, videos and delivering workshops to home builders for several years. The purpose of these efforts is to familiarize the house construction industry with innovations and methods to help prevent or reduce construction problems, and to positively influence the quality of houses being produced. In an effort to determine the effectiveness of current information transfer vehicles, a survey of house building sub-trades was ordered.

A series of construction site visits were then proposed, to go and interview the sub-tradesman directly on site. It was originally proposed to be a survey of mail-out questionnaires to sub-trades. The responses from such a survey would have been tainted somewhat by only having a group of distinct people returning the questionnaires. Furthermore, reaching the actual sub-tradesmen that are involved on the building sites would not have been achieved. The questionnaires would most likely have reached only the main offices of the subcontractors and not the tradesmen themselves.

This report documents the findings of the 1991 survey of 407 construction workers including independent one-man subcontracting businesses, sub-tradesmen working for subcontractors or directly for builders, and large construction companies' site supervisors and foremen.

2. THE SURVEY

CMHC and the ONHWP produce literature aimed at familiarizing the construction industry with innovations and methods to help prevent or reduce construction problems, and to positively influence the quality of houses being produced. The intent of the survey was to determine the effectiveness of the present means of distribution of these publications and to determine whether this material is helpful to the sub-trades. In the interviews, people were shown, and asked if they had ever seen, CMHC's Builder's Series booklets (country wide) and ONHWP's Building Smart brochures (Ontario only). The responses to these and other questions are outlined in section 3 and presented in full in Appendix A.

2.1 THE TRADES

The main target group for the survey was the sub-tradesmen working as subcontractors to builders. However, some of the sub-tradesmen interviewed worked directly for the builders and some tradesmen

interviewed were in fact small builders doing most of the various trades themselves. Due to the slow pace of house construction in general during the fall of this recession period, all tradesmen encountered were interviewed and included in the survey.

In the process of gaining access to the building sites, it was seen that the discussions with the site super or foreman were providing valuable information with regards to technology transfer to the trades. Interviews were accordingly conducted with some site supervisors and foremen, especially on sites where few sub-tradesmen were around or where few sub-tradesmen spoke English or French.

The survey was restricted to the sub-trades for which CMHC and ONHWP have produced literature:

1. Concrete/Foundation Contractors
2. Framing Contractors
3. Drywall Contractors
4. Ventilation Contractors
5. Masonry Contractors
6. Flashing/Caulking Contractors
7. Siding and Sheathing Contractors, and Roofers
8. Insulation/Air Barrier Contractors

It should be noted that roofing subcontractors were included in the Flashing/Caulking category and that the subcontractors that were involved in more than one sub-trade were entered in a 9th category: the small builders that did most of the work themselves, and the site supervisors and foremen that were interviewed.

Figure 1 indicates the distribution of sub-tradesmen interviewed nationally and Figures 2 to 6 show the provincial distributions. The largest number of tradesmen to be interviewed (30% of all respondents) were framing contractors. This does not necessarily indicate that the majority of sub-tradesmen are framers. The large numbers are likely due to the fact that framers are perhaps the most visible trade on a construction site, and because of the timing of the interviews. The next dominant category (24% of respondents) was the 9th, which, as explained above, includes tradesmen that engage in more than one trade, who are often small builders and sub-contractors. This trend holds true at the provincial level as well, except for Nova Scotia.

2.2 SITE SELECTION

The survey was conducted across Canada. Interviews were done in Ontario 40.6%; Atlantic region (Halifax) 12.2%; Quebec region (Montreal and Sherbrooke) 22.0%; Prairies (Calgary) 14.7%; British Columbia (Vancouver and Kelowna) 10.5%.

Figure 1: Percentage of various sub-trades across Canada

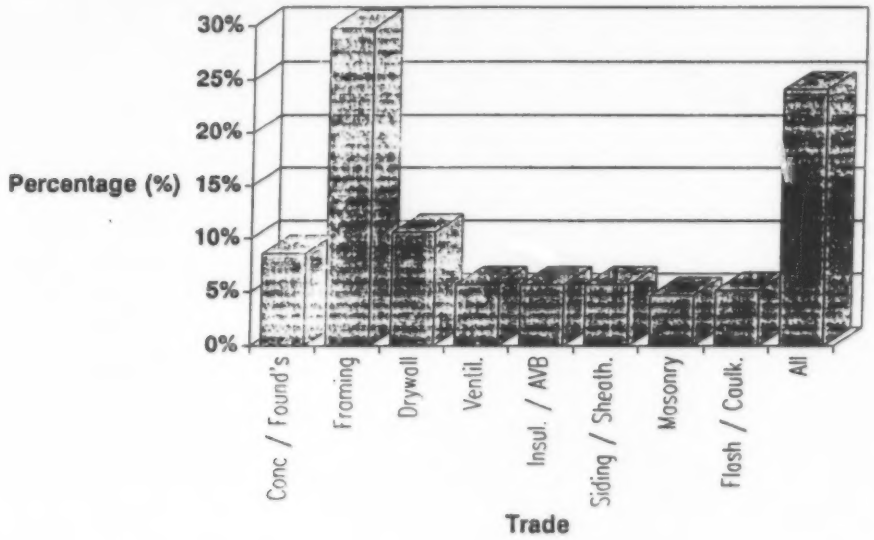


Figure 2: Percentage of various sub-trades across Ontario

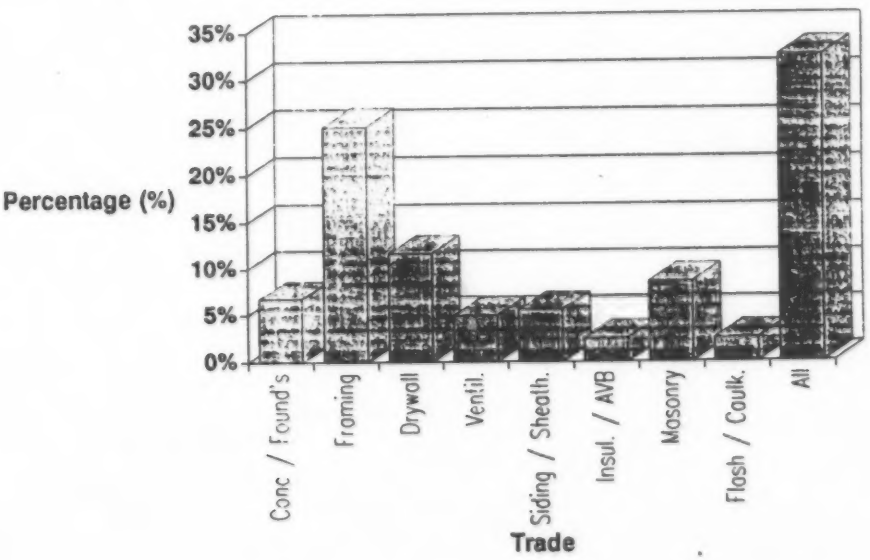


Figure 3: Percentage of various sub-trades across Quebec

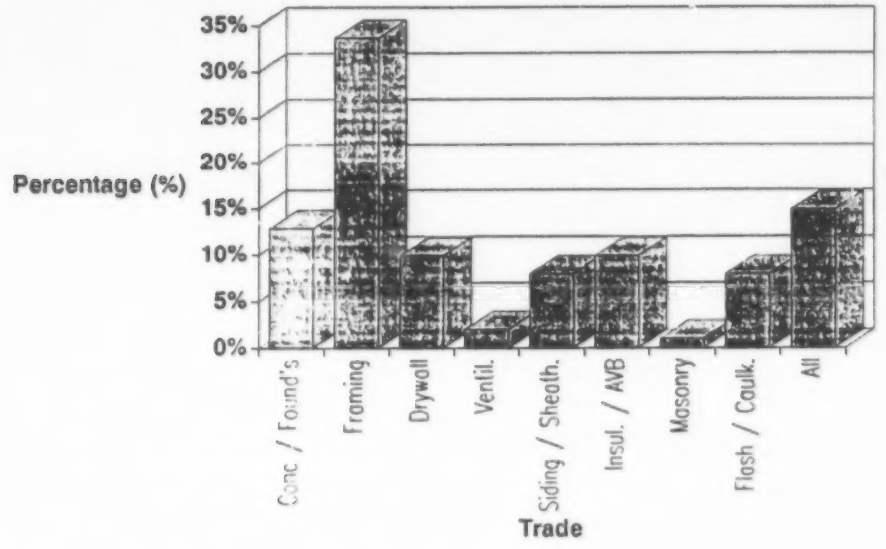


Figure 4: Percentage of various sub-trades across Atlantic

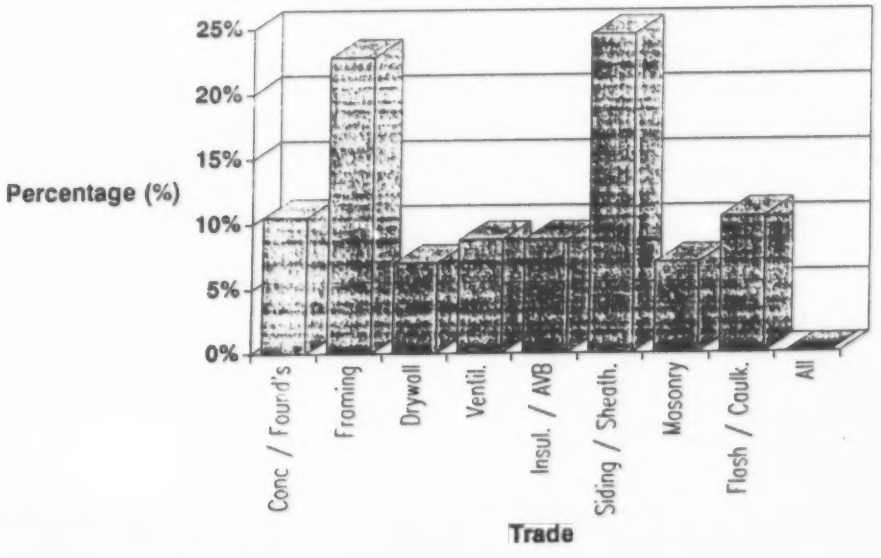


Figure 5: Percentage of various sub-trades across Alberta

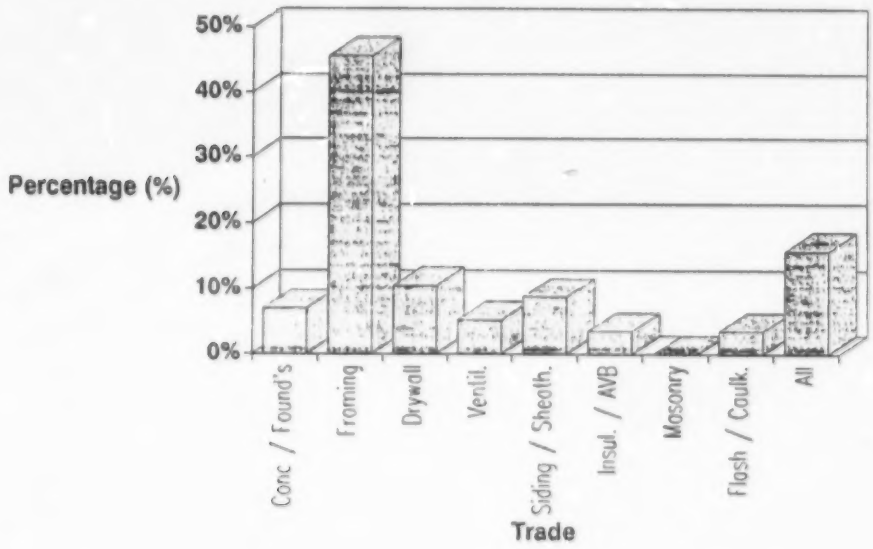
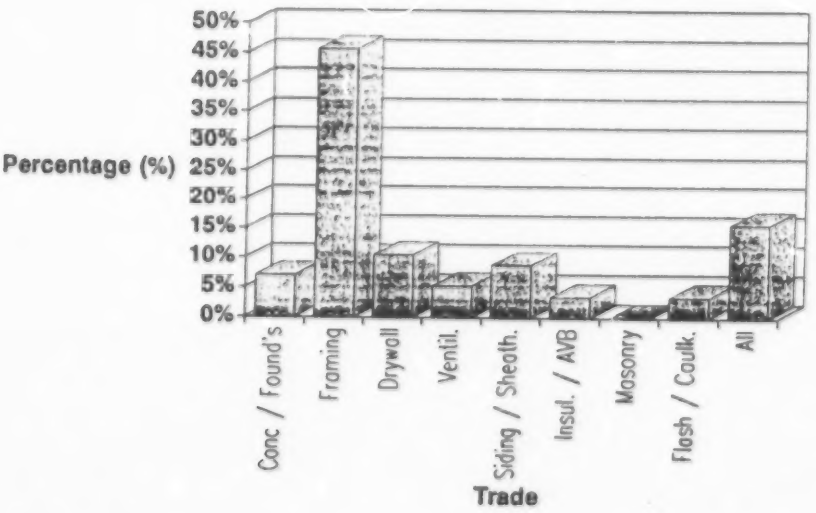


Figure 6: Percentage of various sub-trades across British Columbia



The construction sites were found by consulting CMHC's housing starts statistics to determine which area of the country had residential construction activity. Local CMHC offices were contacted to confirm that construction was on-going at the time, and to obtain a list of builders in the area. The builders were then contacted to find out where their construction sites were and to get authorization to interview their sub-tradesmen. Names of site supervisors were obtained during these calls to the builders' offices. (Inevitably, the interviewers were sometimes guided to sites where only one house was under construction and/or no subcontractors showed-up on the day of the site visit, but generally the visits yielded some useful interviews.)

Other approaches used to get active construction sites were to ask some of the tradesmen, and to search through the real estate section of local papers. In some cities, construction sites were found by looking on maps for residential areas on the fringes of existing developments.

2.3 RESPONSE

Approximately 10% of those interviewed did not indicate their age. Of those that did, 57% were between the ages of 25 and 40, with the majority of these between the ages of 25 and 30. 15% were between the ages of 40 and 45, 8% were under 25 and 20% were over 45. Figure 7 indicates the respondents ages nationally, and Figures 8 to 12 show the provincial distribution.

Conducting the survey in southern Ontario, Calgary and B.C. presented some difficulties due to language. Some tradesmen spoke no English or pretended not to understand in order to avoid being interviewed. Furthermore, it was very cold during the Calgary portion of the survey and the workers did not want to stop to be interviewed. A few interviews resulted in very little information being gathered other than a "not interested" response to the publications and/or to the survey. Although these attempted interviews did not provide much detailed information, they helped to provide a good picture of the industry. The information about some sub-tradesmen's attitudes and the sub-trades interest, the make-up of today's house building work force, was valuable.

Of the 407 records accumulated during the survey, approximately 50 were for the tradesmen who stated that they were not interested in the survey and for the crews that could not or would not speak English or French (for example, Portuguese, Italians, Eastern Europeans, Orientals).

2.4 APPROACH

There were three interviewers that carried out the survey across the country and the sub-tradesmen reacted differently to each individual's style and approach. The responses also reflected the interviewer's

Figure 7: Age Grouping Nationally

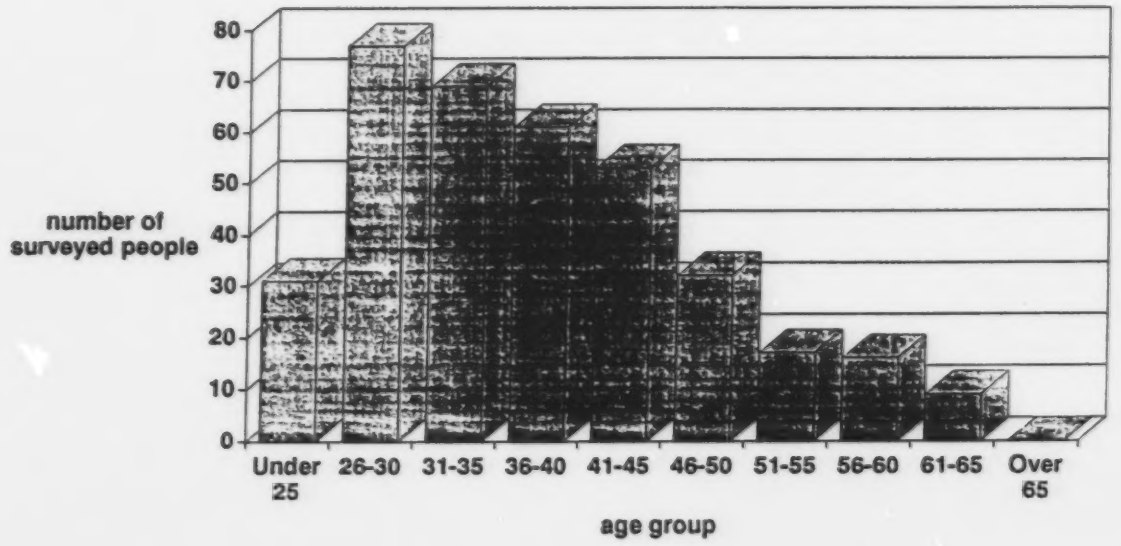


Figure 8: Age Grouping Ontario

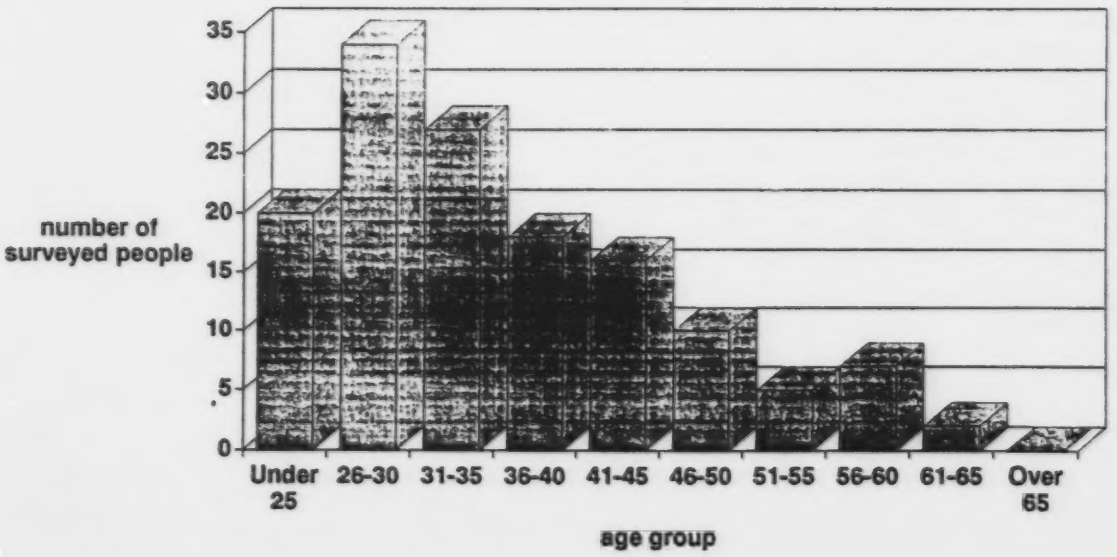


Figure 9: Age Grouping Quebec

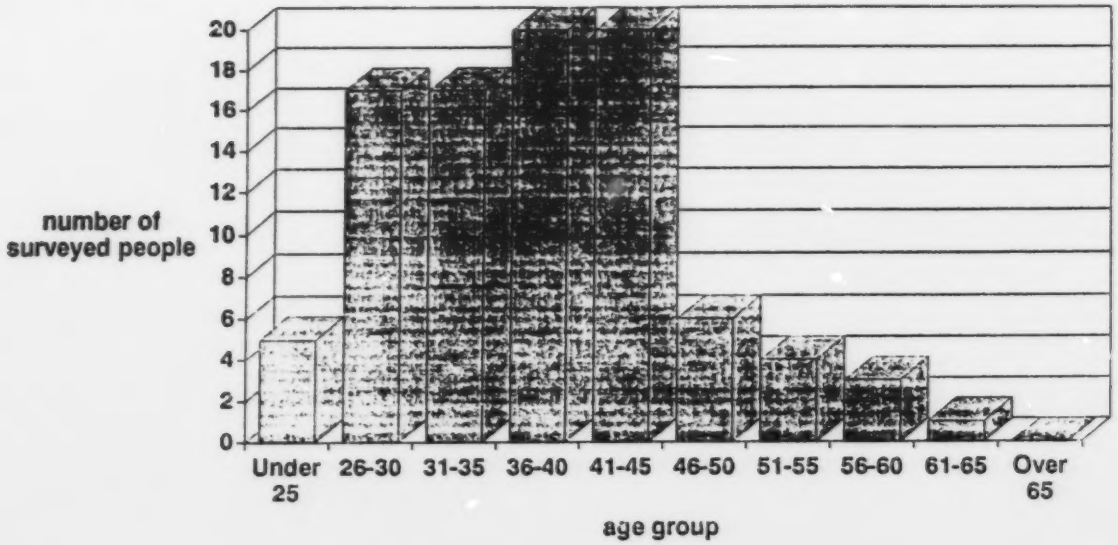


Figure 10: Age Grouping Atlantic

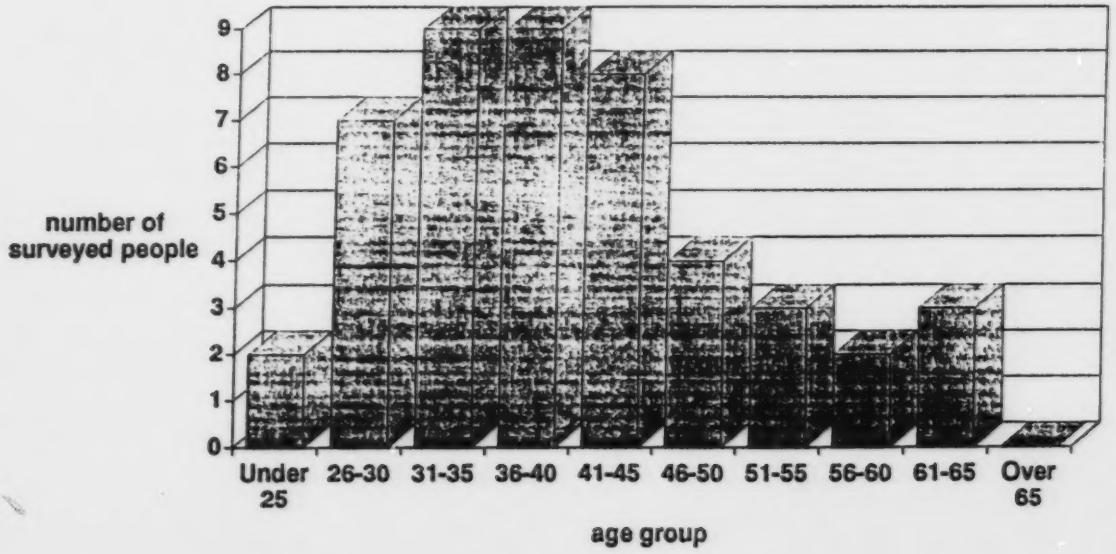


Figure 11: Age Grouping Alberta

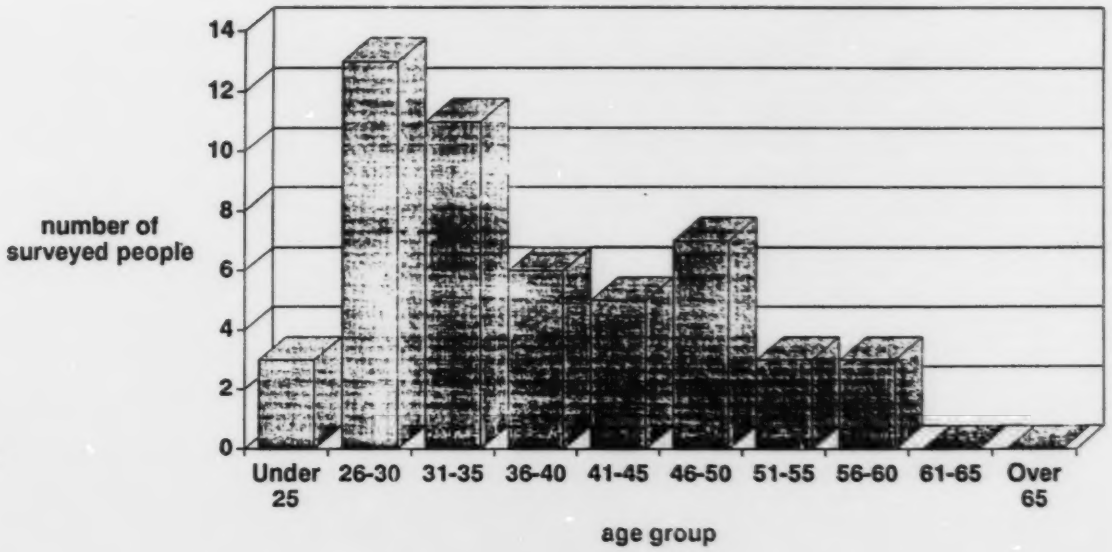
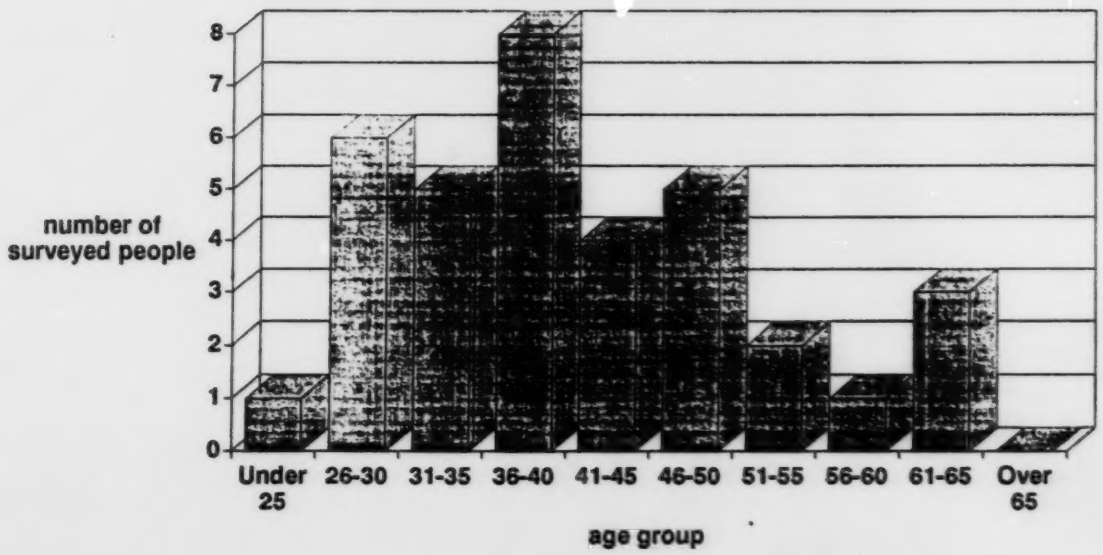


Figure 12: Age Grouping British Columbia



comfort level and interpersonal skills in approaching the tradesmen. Two of the interviewers dressed and appeared like tradesmen while the third interviewer had the appearance of a senior building official. This latter style might have intimidated some tradesmen. One of the interviewers followed the tradesmen while they kept on working in order to get the interview completed. Another interviewer in such cases tended to record a person that would not stop for the interview as "not interested". Emphasis on various portions of the questionnaires also varied from one interviewer to the other. Ideally, perhaps only one interviewer would have done the entire survey but, time restrictions did not allow this to be done.

Regardless of the bias that may have resulted from the differences between the interviewers, useful data was gathered on the present state of technology transfer to the sub-tradesmen, the actual builders.

CMHC booklets and ONHWP brochures were offered to the tradesmen during the interview. (Sometimes this offer was used as a bait for their attention.) The requested brochures were to be sent by CMHC's publications department.

3. FINDINGS

3.1 RESPONSE TO CMHC/ONHWP

One of the main observations across the country was that very few people knew of CMHC. Furthermore, many of those who had heard of CMHC thought it was only a mortgage insurance agency. People in the house building industry, at the sub-trades level and at the site supervisor/foreman levels, are not aware of the technical information available from CMHC. **CMHC's role in housing research and technical information transfer must be better publicized if CMHC is serious about following through to get this information into use.**

Although more people in Ontario were aware of the ONHWP (12%) than they were of CMHC (9%), they were still not widely aware of the technical publications produced for them by the ONHWP.

Across the country, only 33 out of 407 persons had seen at least some of the CMHC Builder's Series booklets. In Ontario, amongst the 166 people approached, 16 persons had seen CMHC's Builder's Series booklets and 21 persons had seen ONHWP's Building Smart brochures. Only 5 people had seen both CMHC's and ONHWP's literature and of these, one was a building inspector. **The dissemination of the information has not been effective.**

Due to the limited number of people that had seen the literature, it became quite evident early in the survey that very little information about the contents and format of the literature would be obtained.

Some commented that the booklet format seemed good although they had not had a chance to evaluate the content. In Ontario, the interest in the ONHWP leaflets was somewhat overshadowed by the CMHC booklets. The tradesmen spent more time looking through the booklets. A few persons commented that the booklets would be more easy to find for future reference as oppose to the leaflets. (The leaflets would more likely be looked at once then lost or thrown away.)

In an attempt to get feedback from the sub-tradesmen on the content and format of the brochures, a brief questionnaire was prepared to be sent along with CMHC's Builder's Series booklets and ONHWP's Building Smart leaflets that the tradesmen requested during the interviews.

A total of 317 persons (77%) wanted to get some or all of the publications that were offered. Unfortunately, CMHC's delays in getting the publications sent to the tradesmen has resulted in the project being completed before any questionnaires could be returned for an analysis of these results. The entire distribution process for CMHC's publications should be reviewed to prevent such delays. Further discussion on the present distribution system will follow in the discussion portion of the report.

3.2 ATTITUDES AND THE QUALITY OF CONSTRUCTION

The attitude of the sub-tradesmen with regard to the literature varied from enthusiastic to disinterested. Some said they knew how to do their job and doubted they'd find much new information in booklets. Others were very interested and had positive comments about the Builder's Series booklets after browsing through them during the interview. Although many tradesmen showed interest in getting information and demonstrated the desire to build better quality houses, frustration with todays "cut-throat" bidding approaches to the house building industry were expressed.

Many commented that in order to survive, they want to produce good quality work but they must also compete on price against others that do not necessarily care as much about quality. Some pointed out that there is not much sense in learning new techniques if these techniques add to the material or labour costs because they can't justify doing them. Because of this frustration, some also suggested that the industry's trades should be certified. Many said that the industry was "nothing but rush, rush, slap them together and go". Unless a technique or procedure was legislated by the building code, or was useful in simplifying or increasing the speed of the work or in cutting costs, many had little hope of seeing changes in the way houses get built. The incentives are not there.

During discussions with tradesmen, it was evident that most of them still have no clear understanding of the house as a system. Therefore, the problem of one tradesman damaging the previous tradesmen's work, or leaving his own work in a state that requires the next tradesman to repair details before executing

his tasks, were reported. In some instances, it is not due to a lack of understanding that these problems arise but to a lack of supervision by the general contractor. Some tradesmen are aware of the house as a system and the implications of their work on the final product. However, they don't do the right things due to a lack of concern. Supervision by the general contractor is the way to ensure that everything comes together as it should.

Although sub-tradesmen have been on piece work in the past, the inspection system (i.e., the builder's or independent inspectors) did keep the work in line. It should be noted that there are still some builders with rigorous inspections that produce relatively trouble free houses but it is not the norm. The builders themselves are under pressure to provide houses at the lowest possible cost to attract house buyers to them. The consumer, unfortunately, is attracted more by the final price and architectural details than performance features of the houses. The consumer doesn't usually evaluate the house on other criteria and that leaves the builder in a difficult position to sell better quality features of performance.

The old sense of pride that an individual used to have in the house building industry is not there anymore as far as the sub-tradesmen are concerned. With more and more of the work being sub-contracted, each individual's contribution to the process gets lost in the final product. In hard times, the subcontractors are fiercely under bidding each other to remain in business. Since the subcontractors prices are low, they rush to cut their losses and when times get better, they rush to do more and recuperate the losses from the bad times. The only quality control mechanism in place is the contractor's supervision and inspection of the construction as it goes along. Lots of builders do not have enough supervision or knowledgeable supervisors to keep up the standards of house construction.

3.3 FURTHER TRAINING

Despite the above described atmosphere in the industry, a large proportion of people interviewed showed interest in getting further training (194 respondents, 47.6%) and in being sent some of the literature (317 respondents, 77.9%). The question regarding further training was asked in a broad sense to include workshops, seminars, evening course, or receiving publications. Most of those surveyed that were over the age of 50 had no desire to read the literature and were not interested in further training. Others, when asked if they wanted further training often responded with "Yes, but it would depend on what was being offered, for how long and at what cost". Those between the ages of 31 and 50 seemed to have an open mind regarding new ideas and recommended construction practices. The younger workers (under 31) seemed more keen to strive for excellence and were eager to learn new ideas and new methods of construction.

In response to the question about what field they would like to get further training in, 110 (27%)

responded in their own trade, 28 (6.9%) answered a new trade and 46 (11.3%) said on new technologies. Amongst the respondents that wanted to learn new trades, many were commenting that they wanted to get out of the construction industry to avoid the seasonal ups and downs of the business.

When trying to identify the knowledge gaps, the tradesmen did not have much to say except that they were not getting any information now, so any information at all would be welcome. Some said that information being provided would be of most value if it related to current building codes.

3.4 INFORMATION DISSEMINATION

Some regional differences were noted with regards to affiliations or organizations that exist to link the tradesmen. There is no common thread linking the sub-tradesmen except in Quebec. Builders have common links in two provinces, Ontario and Quebec. In Ontario the link is the mandatory New Home Warranty Program, and in Quebec, all general contractors are members of l'Association des entrepreneurs en construction du Québec (AECQ). Furthermore, all Quebec workers on the construction sites must be members of a union. Information is sent by the unions and l'AECQ periodically to all its members, so there is a network available to circulate information about publications and training.

During the survey, the tradesmen were asked to suggest means of distribution for technical information. Very few had any suggestions unless they were prompted. Even then, the prompting had to be persistent. Discussions about information transfer were divided into two separate subjects. First there is a need to make the industry people aware of **what is available**. The other aspect of information transfer discussed was **how to distribute the publications** to the tradesmen. The suggestions gathered during the interviews were grouped in three main categories:

1. Direct mailing of lists of available information through various agencies, associations, unions etc.
2. Advertising of available information in newspapers, magazines etc.
3. Distribution of publications through various people, organizations, locations, stores etc. (Via)

Figures 13 to 15 indicate the response of the tradesmen to the above three distribution methods. The most frequently suggested method was the last one listed above, Via. As can be seen in the figures, sub-categories for each of those methods were made to accommodate the types of answers collected. For the method of direct mailing, using a lists from Home Builders Associations; for the Via method, the most popular suggestions were direct distribution through builders and building supply stores; for the remaining method, advertising in the newspaper was preferred to that of advertising in trade publications.

Figure 13: Preferred method of distribution (direct mail)

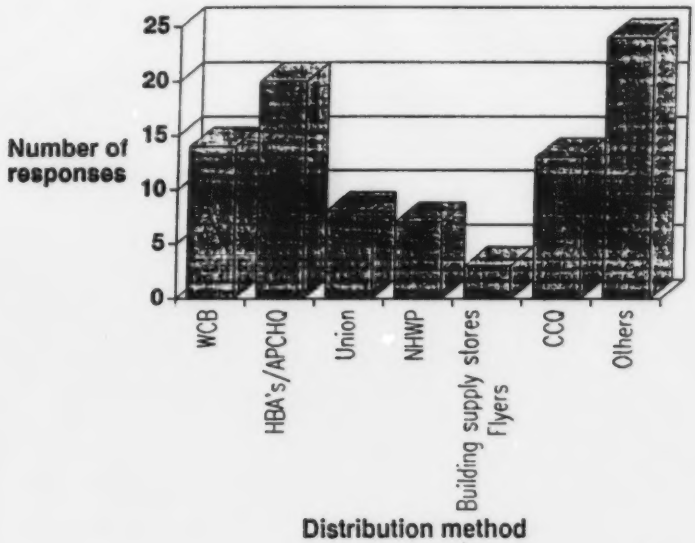


Figure 14: Preferred method of distribution (by advertising)

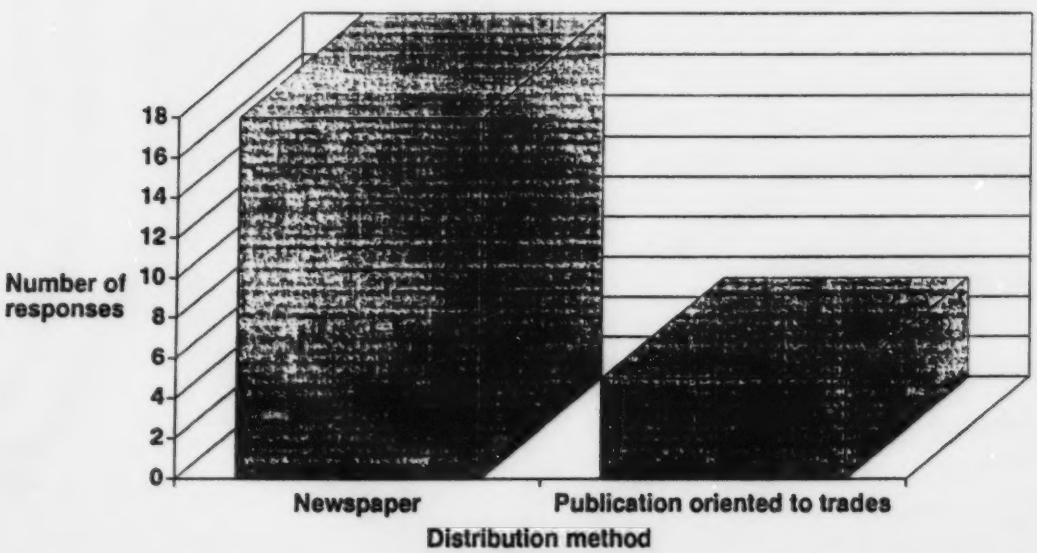
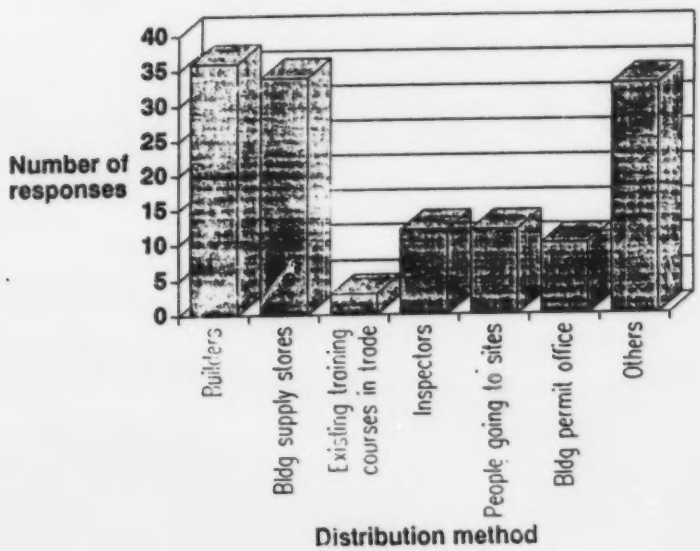


Figure 15: Preferred method of distribution (Via)



The most frequent response to the question of how we could best distribute the publications was: "Do what you are doing now!" which meant having someone going to building sites to distribute literature to them. "Mail it to me!" was another response. However, as there is no consolidated list of all tradesmen, the direct mailing becomes virtually impossible.

Very few common links exist amongst tradesmen across the country, even within the same trade. Most of the sub-tradesmen are not members of any affiliation that can be used to distribute the information.

Specific suggestions and the pros and cons related to them are discussed in section 4..

4. DISCUSSION

Two important issues were raised during the survey. The issue of information dissemination was one. The other the involved the question: "Would the dissemination of technical information and further training of the sub-trades improve the quality of housing being produced?". Based on information gathered about the atmosphere in the industry and the house buying market as it is now, the effectiveness that such improved training would have is being seriously questioned. These issues are discussed below.

4.1 EFFECTS OF BETTER TRAINED SUB-TRADES ON HOUSE PRODUCTION

Although the sub-tradesmen actually build the houses, they are the last in line to affect changes in the way houses are produced. As it is now, the consumer shops for a house based on esthetics and price, the

builder competes against the next builder on price and the sub-tradesmen just follow the trends. Until consumer awareness regarding the performance features of a house is raised, these consumers will not demand performance from the builder. The builder will not be able to point out the features hidden below the surface. The builder will not demand more attention to details or be willing to pay for the extra efforts that may be required from the sub-tradesmen. Therefore, the information transfer should not only be aimed at sub-contractors, but should be aimed at home buyers, builders, inspectors, site supervisors and the sub-tradesmen.

There does not seem to be an incentive to build trouble free houses now. Good builders do not get the recognition they deserve and sometimes the house buyers do not consider the builder's reputation and track record before buying a house. There is no financial incentive now, for builders or sub-tradesmen, to build to avoid problems, except call-backs. The problem is that they do not recognize the cost of the call-backs.

4.2 SUITABILITY OF THE PUBLICATIONS

In general the comments received on site with regards to CMHC's Builder's Series were good. These comments were based only on a brief look at the booklets during the interview. It is unfortunate that so few people had actually seen these publications, before the survey, to be able to provide an informed evaluation.

The ONHWP's Building Smart leaflets did not elicit as many comments during the interviews. As pointed out earlier, the leaflets may have been overshadowed by the CMHC booklets. Nonetheless, a review of these publications is provided below.

The impact that these publications would have on the house construction industry if the sub-tradesmen were in fact aware of their existence is discussed below, along with general comments regarding the format, content and style of each.

4.2.1 CMHC's "Builder's Series"

The format and style of these publications seem to please the sub-tradesmen. Most of the comments collected during the interviews were on information related through the drawings. The tradesmen only had a few minutes to scan through the brochures but it showed that the drawings were a good way to provide information quickly. It also showed that it was an effective way to grab their attention.

4.2.2 CMHC's "Série Constructeur"

The main criticisms were made of the French version of the CMHC publications "Série Constructeur" since the terminology used, as in most French translations, is not understandable! The translators do not keep in mind who the intended audience is when translating the material from English. The prime purpose of these publications is to transfer useful technical information to the construction industry. The purpose is not to teach dictionary french construction terminology that someone in France may also understand. Literature aimed at the construction industry workers should include the terms usually used on the construction sites.

In some instances, one has to refer to the closest drawing to find out what a term describes. To make matters worse, the labelling on the drawings is often:

- improperly translated ("siphon à fermeture et à amorçage automatiques" for "self-sealing or self-priming trap", figure 2, page 6 in LNH 6070),
- incorrectly labelled ("pièce d'appui" at the top of a window and "traverse supérieure" at the bottom, figures 14 & 15, pages 8 & 9 in LNH 5891, these two terms are not as commonly recognized as the English terms "Head" and "Sill" with respect to a window) or,
- improperly converted when it deals with measurements ("1m (3po)" figure 14, page 13 in LNH 5893).

These are just a few examples, and no serious attempts were made to find these errors.

If French brochures are to be used by the tradesmen, a more user friendly language will have to be used. Francophones interviewed both in Quebec and Ontario made similar comments about the terminology used in French construction publications. They can not understand what the terms mean and they get bogged down on the terminology instead of extracting the information sought.

If the purists of the French language want to go on a crusade to change the terminology used on Canadian construction sites, they should go work for l'office de la langue française. The terminology used by the translators is so questionable that some tradesmen couldn't recognize the titles of the brochures related to their trades. Siding contractors had never heard of "Bardage" but "Problème de bardages" is supposed to mean "Siding Problems"! Drywall contractors would read "La pose de plaques de plâtre" and say "Est-ce que c'est le gypse ça? or "Est-ce que c'est le placoplâtre ça?" or "C'est le drywall ça ou le sheetrock ça?". There are also other terms that are not commonly used on construction sites that are used in these publications. It was observed that the French terminology used would be understood by more (but not all) tradesmen in Quebec than by Francophones in areas outside Quebec.

The tradesmen that did not understand some of the terminology in the French publications were unilingual and could not read the English version. It is therefore important to write these publications using the common construction site terminology.

4.2.3 ONHWP's Illustrated Building Code

Favourable comments were expressed about the illustrated Building Code. These comments were mostly from site supervisors, tradesmen/small builders or the builder's representatives that were contacted. The sub-tradesmen were not aware of this publication. This publication is very useful to demystify the building code for the people on the construction sites. Some tradesmen did express that they were mostly interested in getting "current information" and "code related information". Assembling portions of the illustrated building code as they pertain to specific trades and marketing it to the sub-trades could help fulfil this need.

4.2.4 ONHWP's Building Smart Publications

The idea of a brief, illustrated brochure with colour photos to provide information is good. Some of the Building Smart publications do a good job of conveying good information in a concise manner. However, a few of the earlier issues are too cluttered with too many variations in fonts, a lack of uniformity in drawing styles or quality within the same brochure, confusing pictures (not properly explained and do not contribute to the reader's understanding, or pictures that are pasted sideways, page 4, issue #8), and too much clip art that dilutes the importance of the information conveyed. These problems are in issues #3 to #9 inclusively.

Concerns were expressed by some tradesmen and/or site supervisors about the brochure format of the Building Smart. Although attractive, informative, brief and concise, they are more likely to be lost once consulted and less likely to be retained for future reference than a larger booklet such as the CMHC Builder's Series. A binder for the Building Smart series could be offered to the purchasers of some or all of the series to help keep them more visible and facilitate the retrieval of information later.

4.3 PUBLICATION DISTRIBUTION

The survey has provided valuable information about the effectiveness of (or lack of) the technical information transfer mechanisms for the sub-tradesmen. It has also served to gauge the interest of the tradesmen for getting technical information. The sub-tradesmen's opinion about the suitability of the publications was not determined as anticipated since only a few had ever seen them. However, a review of the literature and interviews with the tradesmen have resulted in some suggestions on improvements to the format and content. These are discussed below.

The most important point to note regarding the means of distribution of this type of material is that there is no single means of distribution that will ensure that the information reaches all the tradesmen at a "reasonable" cost. One of the problems of distributing the information is that there is no complete list of tradesmen, contractors and builders. Some suggestions regarding the acquisition of names for direct mailing are to use list of registered members from:

1. Workmen's Compensation Boards
2. Home Builder's Associations
3. Unions
4. New Home Warranty Programs
5. Commission de la Construction du Québec

The problem with these lists is that they are not complete. That is to say, the builder might be registered with the New Home Warranty Program or be a member of the Home Builder's Association, but not all the tradesmen are. There is great difficulty in finding one means of reaching everyone in every trade.

Some other suggestions, in addition to direct mailing, were put forth by the tradesmen themselves and some evolved through conversation with the tradesmen, builders and site supervisors. They are as follows:

1. Include advertisements for the literature in building supply store circulars and/or have building supply stores display them and/or sell them. This method is not perfect since there would be a problem finding the "right" stores and there is no guarantee, of course, that the tradesmen will go to the stores. There is also the problem of costs: are the booklets/brochures free, in which case this would not be a bad method, or is the store asked to sell them, in which case they would expect to be paid for their services.
2. The builders could be reached, through the Warranty Programs for example, and could then distribute to the tradesmen. Builders are often very busy and will not necessarily take the time to distribute them properly.
3. Building permit offices was another suggestion, but as with the previous one, the responsibility of the distribution would again fall onto the shoulders of the builders themselves.
4. Building inspectors could distribute the material to the tradesmen during site visits. However, the tradesmen move from site to site fairly frequently and the building inspectors may not reach all trades during one visit. In addition, the inspectors are committed to other tasks, and might feel that the distribution of the publications will interfere with their primary job of inspecting.
5. Site visits could be made and the tradesmen spoken to personally, similar to this survey. Summer or co-op students could perhaps be hired. Similar problems would exist as with

the inspectors, above, but the student would be dedicated to the task. However, there is again no guarantee that all the tradesmen will be reached.

6. The material could be distributed during training courses, ensuring that the right information is going to the right trade. However, there are many of the tradesmen who will not attend this type of training course.
7. An independent firm could be hired to do the distribution. The firm would likely have many of the same problems as listed above, and would also be fairly costly.
8. Advertisements could be placed in places such as the newspapers and other publications oriented towards the construction trade, or in places such as banks, mortgage brokers, credit unions and grocery stores. This type of advertising would have the benefit of informing the public about good construction practices and what they can expect from good builders. However, people are often not likely to spend the time to send away for the information. Without the actual document present, it would be difficult to convince a tradesman that this is just the information he requires.

In all the above suggestions there is a question of cost. Is the information going to cost the tradesmen anything? If so, who is going to collect the money? Are the tradesmen willing to pay for the material? In talking to the tradesmen, there was much more interest in getting the material if it were free. Many are not inclined to pay for it.

5. CONCLUSIONS AND RECOMMENDATIONS

During the survey it was discovered that very few people realized that the CMHC was involved in housing research and produced technical information. The response to the publications was poor, as many had never seen the literature before. Those that had were often the site supervisors and builders. **CMHC must improve their visibility with the tradesmen.** The French versions of these documents must be properly translated, using words common on the construction site and not dictionary French.

There is no single means of distributing the literature to reach all the tradesmen and contractors. The distribution of publications might be better accomplished if there was one catalogue of publications involving many different groups (CMHC, EMR, NRC etc.). If the publications are to be sold, site visits are probably the most effective way to accomplish this. Students would be appropriate in this role as they do not have the authority image that inspectors do, which might inhibit the tradesmen to spend time with them. In addition, inspectors do not have the time to act as salesmen as well. Places such as banks might prove to be very useful locations to display the material since not only will most tradesmen be reached, but so will the public, who will then begin to demand better construction practices in the homes that they are buying. A new distribution method should be implemented, on a small scale, in order to evaluate the

effectiveness before a full-scale country-wide system is set-up.

Many of the tradesmen interviewed would be interested in getting the material, provided they did not have to send for it or pay for it. **The material must be easily available and free.**

Educating the sub-trades in better building practices will not ensure that the information is used in practice. Speed and money are the motivating factors in the very competitive house construction industry. Until the **public and/or building codes demand better construction practices** changes will not happen, regardless of the literature produced.

Good site supervision is the key to good construction practices and good integration of the work by the various tradesmen. The tradesmen should be made aware of the influence their work has on the building as a whole. A "house as a system" booklet could be used to promote this idea.

Designers must specify good details at the design stage.

It was found that manufacturers literature was not considered to be of much use, and it often did not reach the tradesmen.